

Original Article

Hand function related to Age and Sex

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Objective: The purpose of this study was evaluation of relationship between hand function and age, sex by Jebson Taylor test.

Method: In this study Jebson Taylor was evaluated on hand in 180 normal males and females in 3 age groups :(15-25), (35-45), (55-65), in Iran, Tehran

Results: There was significant deference on hand function (dominate and non dominate) by the Jebson Taylor in 3 age groups. There was significant deference on dominant hand function. By the Jebson Taylor Test between males and females in third substest (p-value= 0/08) and also in fifth substest (p-value= 0/04).

Conclusion: when we want to employ assistive technology (AT) for absent or impaired abilities we should be concerned on functional aspects.

Key word: Hand function, Jebson Taylor, Age, Sex

Introduction:

The complex arrangement of the hand with its intimate anatomy and multiarticulate structures is unforgiving of impairments. The hand is concerned with the ability and capability of a person to perform activities independently. Hand function exquisitely to gesture and express touch and care, dress and feed (1, 2). Hand function indicates the patient's actual performance in ADL. Impairment of hand can be devastating. The Jebson Hand Function Test assesses hand function in terms of simulated ADL (2, 3). As with all standardized tests. It has standard procedures and it is documented. The Jebson Hand Function Test is one of the first objective standardized tests suitable for a variety of hand

conditions. This test does discriminate between subjects with and without different physical disabilities. (4, 5)

Jebson norms are categorized according to maximum time, age, and gender (6).

Relationship between hand function and age, gender affects on procedure of Rehabilitation for recovery of quality of hand function.

Jebson and associates (4) found no significant differences in performance among age group younger than 60 years. To date Jebson had presented norms for 2 age groups only (20-59 and 60-94 years). Recent clinical experience shows about the likelihood of Jebson's results being valid on all his test items (7) Therefore the aim of this was hand function related to sex and age

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on all test items in 3 categories: 15-25; 35-45; 55-65.

Method:

Test material:

An American version of the Jebson Hand Function Test was employed . This test is seven –part, timed diagnostic test to determine level of hand function. The seven, subtests include:

- 1-Writing
- 2-Simulated page turning
- 3-Lifting small objects
- 4-Simulated Feeding
- 5-Stacking
- 6-Lifting large, lightweight objects
- 7-Lifting large , heavy objects

Each subtest was individually administered according Standardized instruction of the American version of the Jebson Test.

Subjects:

The test was administered to 30 men and 30 women in each of the following 3 Categories: 15-25; 35-45; 55-65. There was no clinical evidence of disease in any of group. 180 subjects (50% men50% women) drown from Rey area in Tehran/Iran. The sample included professional workers, manual and semi-skilled workers, housewives, factory work-

ers subjects were obtained by advertisement and requests to institution for volunteers.

Results:

Consequently percentile norms for each age group on all 7 tests Were found for males and females. the few significant differences on the sex factor were in accordance with Jebson’s findings of suggestive difference between males and females on several test items. (4) The Results documented the males in the 15-25 age group ,were better (F=4.29,P-value=0.04) than females in “lifting small objects” on dominant hand , in “lifting large light” and “heavy objects” on non-dominant hand (poor significant<0.1). Females in the 35-45 age group, on the other hand, performed better than males in “stacking” (F=12.67, P-value=0.0001) and “lifting light object (F=0.55, P-value=0.06) on dominant hand. They performed also better in “simulated feeding” (F=4.08, P-value=0.04) and in “Stacking” (F=0.25, P-value=0.001) on non-dominant hand. Females in the 55-65 age group performed better than males in stacking of dominant hand (F=8.41, P-value=0.005) and on non-dominant hand (F=2.23,P-value=0.05)

The results showed that there was significant difference in three categories related to age (P<0.0001).

Table1: mean scores and standard deviation (SD) on all test items as a function of sex and age

ITEMS	sex	Dominate/nondominate	M/SD	15-25	35-45	60-65
writing	M	Dominate hand	Mean	8.31	7.92	9.72
			SD	1.35	2.81	3.1
		No dominate hand	Mean	20.06	19.43	24.42
			SD	4.47	4.40	4.92
	f	Dominate hand	Mean	8.26	8.11	9.56
			SD	2.87	2.84	3.06
		No dominate hand	Mean	20.46	20.03	23.64
			SD	4.52	4.52	4.86

ITEMS	sex	Dominate/nondominate	M/SD	15-25	35-45	60-65
Simulated page turning	m	Dominate hand No dominate hand	Mean	5.9	6.12	7.25
			SD	2.42	2.47	2.69
	f	Dominate hand No dominate hand	Mean	6.47	6.36	7.20
			SD	2.54	2.52	2.68
Lifting small objects	m	Dominate hand No dominate hand	Mean	5.85	5.83	7.01
			SD	2.41	2.41	2.64
	f	Dominate hand No dominate hand	Mean	6.39	6.48	7.23
			SD	2.52	2.54	2.68
Simulated feeding	m	Dominate hand No dominate hand	Mean	5.98	6.49	6.98
			SD	2.44	2.54	2.64
	f	Dominate hand No dominate hand	Mean	6.85	6.78	7.41
			SD	2.61	2.60	2.72
Stacking	m	Dominate hand No dominate hand	Mean	5.51	6.89	6.92
			SD	2.34	2.62	2.63
	f	Dominate hand No dominate hand	Mean	6.66	7.71	7.54
			SD	2.58	2.77	2.74
Simulated feeding	m	Dominate hand No dominate hand	Mean	5.90	6.40	7.60
			SD	2.42	2.52	2.75
	f	Dominate hand No dominate hand	Mean	7.29	6.85	7.99
			SD	2.7	2.61	2.82
Stacking	m	Dominate hand No dominate hand	Mean	6.07	6.75	7.45
			SD	2.46	2.59	2.72
	f	Dominate hand No dominate hand	Mean	7.35	7.32	8.05
			SD	2.71	2.70	2.83
Stacking	m	Dominate hand No dominate hand	Mean	3.32	3.27	4.35
			SD	1.82	1.80	2.08
	f	Dominate hand No dominate hand	Mean	3.75	3.75	4.65
			SD	1.93	1.93	2.15
Lifting large, light-weight objects	m	Dominate hand No dominate hand	Mean	3.12	3.74	4.98
			SD	1.76	1.93	2.23
	f	Dominate hand No dominate hand	Mean	3.82	4.01	5.13
			SD	1.95	2.00	2.26
Lifting large, heavy objects	m	Dominate hand No dominate hand	Mean	3.54	3.53	4.07
			SD	1.88	1.87	2.01
	f	Dominate hand No dominate hand	Mean	4.14	3.92	4.62
			SD	2.03	1.97	2.14
Lifting large, heavy objects	m	Dominate hand No dominate hand	Mean	3.50	3.78	4.25
			SD	1.87	1.94	2.06
	f	Dominate hand No dominate hand	Mean	3.85	4.13	4.73
			SD	1.96	2.03	2.17
Lifting large, heavy objects	m	Dominate hand No dominate hand	Mean	3.52	3.53	4.15
			SD	1.87	1.87	2.03
	f	Dominate hand No dominate hand	Mean	4.14	3.92	4.62
			SD	2.03	1.97	2.14
Lifting large, heavy objects	m	Dominate hand No dominate hand	Mean	3.50	3.60	4.03
			SD	1.87	1.89	2.00
	f	Dominate hand No dominate hand	Mean	3.85	4.13	4.73
			SD	1.96	2.03	2.17

Table 2: Analysis of variance summery on group mean of test
Degrees of freedom (df) and f-value (f)

Items	Factor	Dominate hand			No dominate hand		
		df	f	p-value	df	f	p-value
writing	Sex	1	0.00	.98	1	0.01	0.92
	Age	2	11.65	0.00	2	13.20	0.00
	Sex	2	0.12	0.88	2	0.33	0.71
Simulated page turning	Sex	1	1.17	0.28	1	0.02	0.89
	Age	2	20.49	0.00	2	8.42	0.00
	Sex	2	0.24	0.84	2	0.10	0.90
Lifting small objects	Sex	1	0.07	0.78	1	0.45	0.50
	Age	2	23.24	0.00	2	7.17	0.001
	Sex	2	2.70	0.07	2	1.90	0.33
Simulated feeding	Sex	1	0.72	0.39	1	0.96	0.32
	Age	2	37.64	0.00	2	7.70	0.001
	Sex	2	0.99	0.37	2	0.47	0.62
Stacking	Sex	1	5.85	0.01	1	5.85	0.01
	Age	2	40.72	0.00	2	40.72	0.00
	Sex	2	6.90	0.001	2	1.18	0.30
Lifting large, lightweight objects	Sex	1	1.89	0.19	1	0.009	0.92
	Age	2	15.63	0.00	2	11.97	0.00
	Sex	2	0.72	0.48	2	1.42	0.24
Lifting large, heavy objects	Sex	1	0.26	0.60	1	0.004	0.95
	Age	2	19.43	0.00	2	9.24	0.00
	Sex	2	0.51	0.60	2	2.02	0.13

Discussion:

These findings document that age is an effective factor on hand function. Age Related changes hand function. There were no significant differences on the sex factor without age. (significant poorer in: lifting small objects” on dominate hand and in “stacking” on non-dominant).

In this study, we didn't find significant difference between men and women In 3 categories. However, study findings do differed Jebson and from those of Jebson and associates as they found no particular pattern worthy of generalization. (8)

In this case, There are several factors , Such as: kind of job, daytimes for work , site of word , location of living , existence of relaxation , activities , attention , eye-hand coordination , muscle strength, obtain sensory stimulation ,the high of upper extremity and weight.

In this research was found that hand function (dominant and non-dominant) in men and women in the 55-65 age group has decreased in comparison of the 15-25 and 35-45 age group. Necessary

time in this group (55-65) has been increased. Decline of hand function with rise of age, is clearly presented in the other researches. (5, 7, 8, 9, 10) Age-relate changes muscle strength, sensibility, touch/ pressure threshold, neuromuscular, In coordination, visual, hearing, nerve conduction velocity , skin receptors, sensory perception and central processing . these changes affects on hand function .(11,12,13,14,15,16,17)

Physical performance generally improves into the middle of the second decade and then decrease as people age .(18) Capacity for physical work also decreases with age as people experience more chronic conditions hand limit their activity .(19) This decline in physiologic status limits function especially hand function .

In sum up, when we want to employ assistive technology (AT) for absent or impaired abilities we should be concerned on functional aspects.

Conditions in age levels. AT devices should be designed for suitable age levels. AT devices that match age levels and abilities help them assume their meaningful lives.

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